

North Sapphire Elk Research Project

Progress Report - Spring 2014

Montana Fish, Wildlife and Parks (MFWP) in collaboration with Ecosystem Research Group and the MPG Ranch initiated a two-year elk research project in the North Sapphire Mountains. In February 2014, MFWP assisted by a contract capture team captured, sampled, and radio-collared forty-five adult female and twenty bull elk. The research team is monitoring elk movements and survival. Efforts to evaluate elk habitat in this area began in May 2014. This report summarizes the work conducted to date, and preliminary findings.



Project Background

About one thousand elk inhabit the Northern Sapphire Mountains and Bitterroot Valley south of Missoula, providing hunting and wildlife viewing opportunities to the residents of the Bitterroot and Missoula Valleys, to Montanans from beyond the immediate region, and to out-of-state visitors. This area includes Hunting District (HD) 204 and the north portions of HD 261 and 240. These elk herds typically move from higher elevation summer ranges on public and corporate timber lands to lower elevation winter ranges, most of which are on private land. In recent years, this migratory behavior may have changed and elk may be spending increasing amounts of time on privately owned portions of the winter range. This extended valley habitation may be undesirable to landowners trying to manage forage for domestic livestock, and to hunters searching for elk on public lands. The goal of the project is to collect baseline information regarding public and landowner opinions towards elk management and baseline information regarding elk movements in the northern Sapphire area. We will use this information to identify and develop effective responses to management challenges within the hunter and private landowner communities of the Northern Sapphire Range.

Elk Pregnancy and Disease Exposure

We estimated age of collared elk based on tooth wear patterns. Age of females varied from 3 to 10, and averaged 6.4 years old. Age of bulls varied from 2 to 9, and averaged 4.7 years old.

We collected blood samples during the elk capture to determine pregnancy status and screen for exposure to disease. Pregnancy status is determined based on pregnancy specific protein-B levels in the blood. Forty-one of forty-five (91%) adult female elk tested positive for pregnancy. This pregnancy rate is considered normal for elk in this region of Montana. We estimated the percentage of ingesta-free body fat, an indicator of female body condition. Body condition is an indicator of nutritional resources, and is correlated with the probability of pregnancy and overwinter survival. The mean percentage body fat for forty-four adult females sampled was 7.82%. This is slightly higher than estimates collected over a three-year period in the southern Bitterroot Valley, but similar to observations from other herds sampled in southwest Montana.

All female elk were screened for exposure to brucellosis, leptospirosis, para-influenza3, infectious bovine rhinotracheitis, bovine viral diarrhea type 1 and 2, and epizootic hemorrhagic disease. We found no evidence that any elk had been exposed to brucellosis, bovine viral diarrhea, or epizootic hemorrhagic disease. Animals tested positive for exposure to para-influenza (16%), infectious bovine rhinotracheitis (16%), and leptospirosis (7%). Disease exposure levels were all within the range of normal for elk in Montana.



Elk Monitoring and Survival

Sixty-five radio collars were deployed during the February elk capture including 20 iridium satellite collars on bull elk, 40 satellite collars on cow elk, and 5 store-on-board GPS collars on cow elk. The satellite collars collect one point every 2 hours for a total of 12 points a day. Location data from satellite collars are tracked on the internet and downloaded. The store-on-board GPS collars collect one point every hour and store the data on the collar. Both types of collars contain a VHF transmitter, a mortality sensor that is triggered if the collar is stationary for 12 hours, and a drop-off mechanism that will release the collar after 2 years.

To date, two collars had a malfunctioning drop-off mechanism which caused them to release early; one on March 26th another on May 17th. All other collared elk are alive.

Elk Movements

Collared cow elk were concentrated in 3 general areas from February through April. These areas included: north Miller Creek, east of Highway 93 between Lolo and Florence, and north of the Burnt Fork of the Bitterroot River in the Iron Cap area (Figure 1). Cow elk that were collared on the west side of Highway 93 moved down to the highway several times and 2 elk briefly crossed the highway for several hours during the night, then returned to the west side of the highway. Cow elk that were collared on the east side of the highway spent time along the Bitterroot River, but did not move out to or cross Highway 93. Collared bull elk generally wintered at higher elevations with groups concentrated along the Burnt Fork of the Bitterroot, in the Three-mile Game Range, and along Davis Creek. In late April and early May some cow elk began moving either to higher elevations or to lower elevation river areas. Cow elk collared north of Miller Creek moved across the north end of the Sapphire Mountains to the area south of Bonner and west of Interstate 90 along the Clark Fork River (Figure 2). Some of the cow elk collared east of Highway 93 between Lolo and Florence moved down to the corridor between Highway 93 and the Bitterroot River, while others have moved to higher elevations or south along 8-mile creek. Bull elk have remained in the same general areas they wintered.

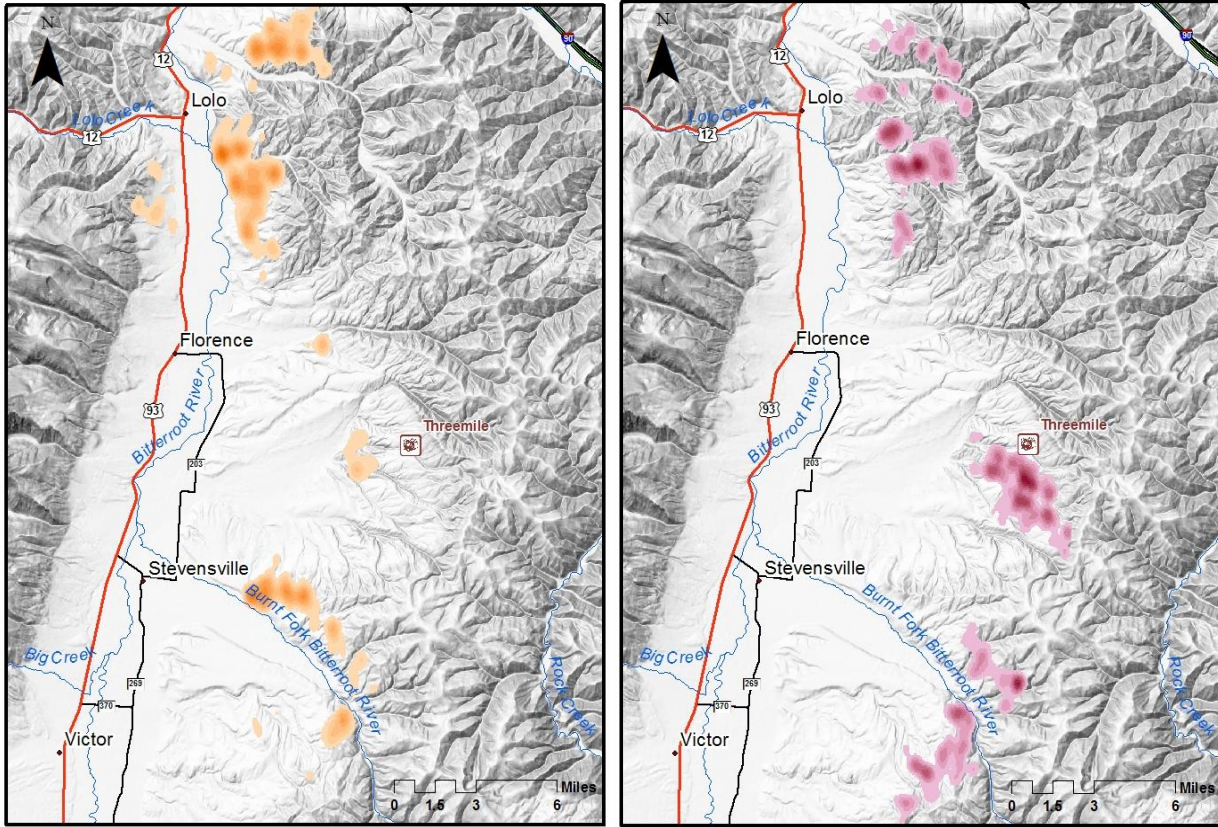


Figure 1. Winter cow (orange) and bull (pink) distributions displayed as kernel density estimates.

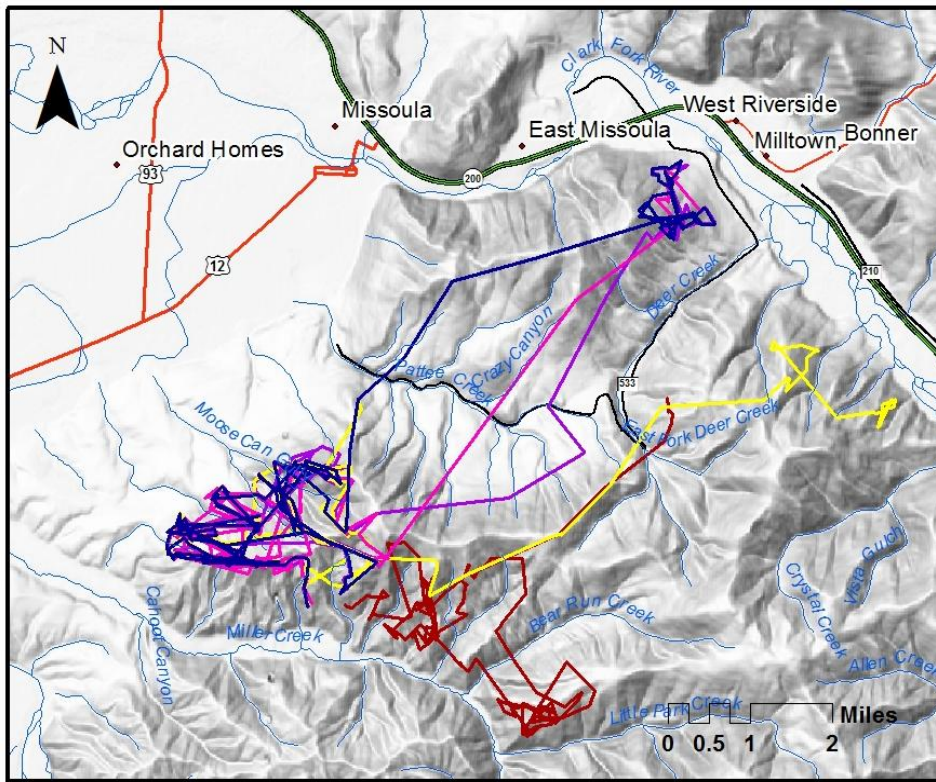


Figure 2. The spring migration paths of 5 female elk. These elk wintered in Miller Creek and departed the winter range in early May.

Elk Habitat and Vegetation Monitoring

We are investigating elk forage availability and quality across the study area. Broadly, the goals of this work are to (1) evaluate elk diet during the spring, summer and winter, (2) evaluate forage availability across the study area, and (3) evaluate the digestibility of elk forage plants. Elk fecal pellets will be collected and analyzed for composition to improve knowledge of important forage species across seasons. The forage availability and digestibility information will be used to develop an estimate of forage quality across the study area. Another goal of this work is to understand the effects of fire on elk forage quality. Accordingly, we will be sampling across a gradient of burn histories to evaluate how forage availability and quality varies through time post-fire. The elk diet and vegetation monitoring began in early May and will continue through fall.



Landowner and Hunter Survey

We are currently conducting a survey of landowner perceptions of elk management in HD 204 and elk hunters perceptions of elk management in HD 204. Landowners with 160 or more acres of property within the study area were surveyed. A random sample of 5,000 resident elk license holders from the 2013 hunting season who reside in Missoula, Ravalli, and Granite Counties were included in the elk hunter survey. These two surveys will help provide baseline information about the perceptions of both hunters and landowners regarding: (1) current elk population management objectives; (2) current elk hunting regulations; and, (3) specific issues related to elk hunting access. The two surveys will also explore hunter and landowner preferences for how elk hunting and hunting access in HD 204 might be managed in the future. Surveys will be received through May and results will be summarized during Fall 2014.

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